

# KODAK HIGH SPEED INFRARED FILM

## 135 magazines and 35mm x 50' rolls

**Note:** Total darkness is required for opening film can, for loading and unloading camera, and for processing.

- A high-speed, infrared-sensitive black-and-white film on dimensionally stable .004-inch ESTAR Base.
- Suitable for distant haze penetration and special effects.
- Used in scientific, medical, biological, and questioned-document photography.

**Handling:** Handle only in total darkness.

For 135 magazines, total darkness is required for taking the magazine out of the film can and for all handling while the magazine is outside of the can. After the last exposure has been made, rewind the film into the magazine and return it to the film can in total darkness.

**Filters:** For most applications, a filter must be used over the lens (or light source) to absorb the blue light to which the film is sensitive. For general photography, a KODAK WRATTEN Filter No. 25 is recommended for this purpose.

### EXPOSURE

Exact speed recommendations are not possible because the ratio of infrared to visible radiation is variable and because photoelectric meters are calibrated only for visible radiation. Use a hand-held meter rather than a through-the-lens type.

It is recommended that trial exposures be made to determine proper exposure for the conditions under which photographs will be made. Under average conditions, the following speeds can be used as a basis for determining exposures when meters marked for ASA speeds or exposure indexes are used.

**Speeds**—for recommended development in KODAK Developer D-76:

KODAK WRATTEN Filters	Daylight	Tungsten
No. 25, 29, 70, or 89B	50	125
No. 87 or 88A	25	64
No. 87C	10	25
Without a Filter	80	200

**Focusing:** For best definition, take all infrared pictures at the smallest lens opening that conditions permit. If large apertures must be used and the lens has no auxiliary focusing mark, establish a focusing correction by photographic focusing tests. A basis for trial is the extension of the lens by  $\frac{1}{4}$  of 1 percent of the focal length of the lens.

**Daylight Exposures**—for subjects in bright or hazy sunlight (distinct shadows):

Exposed through KODAK WRATTEN Filter No. 25		No Filter
Distant Scenes	Nearby Scenes	Distant Scenes
1/125 sec at <i>f</i> /11	1/30 sec at <i>f</i> /11	1/125 sec at <i>f</i> /16

**Photolamp Exposure Table:** For use with a KODAK WRATTEN Filter No. 25 over the camera lens. Use two 500-watt reflector-type photolamps or two No. 2 photolamps in 12-inch reflectors giving comparable light output. Place one lamp on each side of the camera at an angle of 45° to the camera-subject axis.

Lamp-to-Subject Distance	3 feet	4½ feet	6½ feet
Lens Opening at 1/30 Second	<i>f</i> /11	<i>f</i> /8	<i>f</i> /5.6

(over)

**Flash Exposures:** To obtain the lens opening for electronic flash or flashbulbs, divide the guide number by the distance in feet from flash to subject.

**Electronic Flash Guide Numbers:** Use with a KODAK WRATTEN Filter No. 87 over the camera lens.

Output of Unit (BCPS or ECPS)	500	700	1000	1400	2000	2800	4000	5600
Guide Number for Trial	40	45	55	65	80	95	110	130

**Flashbulb Guide Numbers:** The following numbers apply for the clear flashbulbs indicated when a KODAK WRATTEN Filter No. 25, No. 29, No. 70, or No. 89B is used over the camera lens.

Between-Lens Shutter Speed	Syn-chroni-zation	AG-1*	M2†	M3‡	11§	2§	Focal-Plane Shutter Speed	6
				5‡ 25‡	40§	22§		26‡
Open, 1/30	X or F	190	200	290	320	390	1/30	300
1/30	M	140	NR	280	290	360	1/60	210
1/60	M	140	NR	250	270	340	1/125	150
1/125	M	110	NR	210	230	290	1/250	105
1/250	M	90	NR	170	180	220	1/500	75
1/500	M	70	NR	120	130	170	1/1000	50

Bowl-Shaped Polished Reflectors: \*2-inch; †3-inch; ‡4- to 5-inch; §6- to 7-inch. If shallow cylindrical reflectors are used, divide these guide numbers by 2. For intermediate-shaped reflectors, divide the numbers by 1.4. NR = Not Recommended.

**Caution:** Bulbs may shatter when flashed. Use a flashguard over the reflector. Do not flash bulbs in an explosive atmosphere.

## PROCESSING PROCEDURE www.butkus.us

**1. Develop:** Times given are for development in a tank with agitation at 1-minute intervals.

KODAK Developer	Approximate Developing Time (in Minutes)				
	65 F 18 C	68 F 20 C	70 F 21 C	72 F 22 C	75 F 24 C
D-76 (Normal Contrast)	14	12	11	10	9
D-19 (High Contrast)	9	8	7½	7	6½

**2. Rinse:** At 65 to 75 F (18–24 C) with agitation.

KODAK Indicator Stop Bath—30 seconds

or KODAK Stop Bath SB-5 —30 seconds

A running-water rinse can be used if an acid rinse bath is not available.

**3. Fix:** At 65 to 75 F (18–24 C). Agitate films frequently during fixing.

KODAK Rapid Fixer —2 to 4 minutes

or KODAK Fixer —5 to 10 minutes

or KODAK Fixing Bath F-5—5 to 10 minutes

**4. Wash:** For 20 to 30 minutes in running water at 65 to 75 F (18–24 C).

To minimize drying marks, treat in KODAK PHOTO-FLO Solution after washing, or wipe surfaces carefully with a KODAK Photo Chamois or a soft, wet viscose sponge. To save time and conserve water, use KODAK Hypo Clearing Agent.

**5. Dry** in a dust-free place.

**Storage:** Keep unprocessed film at 50 F (10 C) or lower in the original can. To avoid moisture condensation on film which has been refrigerated, allow film to stand at room temperature for at least 4 hours before use.

**For more information,** see Kodak Publication No. M-28, *Applied Infrared Photography*, and Kodak Publication No. N-1, *Medical Infrared Photography*.

**Notice:** This film will be replaced if defective in manufacture, labeling, or packaging, even though caused by our negligence or other fault. Except for such replacement, the sale or any subsequent handling of this film is without other warranty or liability.

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